

AMENDMENTS TO THE CLAIMS

1– 41. (Canceled)

42. (New) A method of monitoring, by an application, peer-to-peer clouds in a managed framework, the method comprising:

creating a managed set of peer cloud class objects wherein each peer cloud class object of the managed set of peer cloud class objects contains a scope, a scope identification, a current state, a cloud name, and an indication of whether the cloud name is local;

creating a single managed peer-to-peer networking cloud interface object that:
exposes a set of at least three methods to a calling application for monitoring one or more peer-to-peer clouds, wherein the set of at least three methods are implemented in a set of objects separate and distinct from the single managed peer-to-peer networking cloud interface object, the calling application, and the managed set of peer cloud class objects, and wherein the set of at least three methods include:

a GetGlobalCloud method that outputs a default peer cloud class object from the managed set of peer cloud class objects, the default peer cloud class object corresponding to a default cloud for a node on which the calling application resides,

a GetClouds method that outputs a list of peer cloud class objects from the managed set of peer cloud class objects, the list of peer cloud class objects corresponding to a set of clouds on a peer-to-peer system on which the calling application resides, and

a CloudWatcher method that outputs an indication of a cloud state change on the peer-to-peer system; and

provides a CloudChanged event corresponding to the cloud state change, wherein the CloudChanged event identifies a cloud having the cloud state change and

a cloud state change type, and wherein the CloudChanged event is raised when the cloud state change occurs;

selecting, by the calling application, one method from the set of at least three methods exposed by the single managed peer-to-peer networking cloud interface object;

communicating with the single managed peer-to-peer networking cloud interface object by the calling application;

passing, by the calling application to the single managed peer-to-peer networking cloud interface object, parameters required by the selected method; and

initiating the selected method.

43. (New) The method of claim 42, further comprising exposing a set of at least six current state values for the current state of each peer cloud class object, the set of at least six current state values including:

an UninitializedCloud value for indicating that a cloud corresponding to the each peer cloud class object is uninitialized,

a SynchronizingCloud value for indicating that the cloud is being initialized,

an ActiveCloud value for indicating that the cloud is active;

a DisabledCloud value for indicating that the cloud is disabled in a peer-to-peer registry,

a StandaloneCloud value for indicating that a local node on which the current application resides is an only node in the cloud, and

a ConnectionLostCloud value for indicating that the cloud is active and is unconnected to the peer-to-peer system;

44. (New) The method of claim 42, wherein:

selecting one method from the set of at least three methods comprises selecting the GetClouds method,

passing parameters required by the selected method comprises passing a scope parameter, and

initiating the selected method comprises initiating the GetClouds method, and the GetClouds method outputs the list of peer cloud class objects corresponding to a set of clouds of a scope corresponding to the scope parameter.

45. (New) The method of claim 42, wherein:

selecting one method from the set of at least three methods comprises selecting the GetClouds method,

passing parameters required by the selected method comprises passing no parameters, and

initiating the selected method comprises initiating the GetClouds method, and the GetClouds method outputs the list of peer cloud class objects corresponding to all clouds of the peer-to-peer system.

46. (New) The method of claim 42, wherein:

selecting one method from the set of at least three methods comprises selecting the CloudWatcher method, and

initiating the selected method comprises initiating the CloudWatcher method for a given scope, and the CloudWatcher method outputs an indication of at least one peer cloud class object from the managed set of peer cloud class objects, the cloud of the at least one peer cloud class object in the given scope and having the cloud change.

47. (New) The method of claim 42, further comprising exposing a set of cloud state change type values for the cloud state change type, the set of cloud state change type values including:

a CreatedCloud value for indicating that a new cloud has been created for the given scope,

a DeletedCloud value for indicating that a previously existing cloud has been deleted for the given scope, and

an UpdatedCloud value for indicating that a currently existing cloud of the given scope has been updated.

48. (New) A method of registering, by an application, a peer endpoint with a peer-to-peer system, the method comprising:

creating a managed set of peer endpoint class objects wherein each peer endpoint class object of the managed set of peer endpoint class objects contains a peer endpoint, an IP address associated with the peer endpoint, and a cloud with which the peer endpoint is associated;

creating a single managed peer-to-peer networking endpoint registration interface object wherein the single managed peer-to-peer networking endpoint registration interface object:

provides a set of peer endpoint registration properties including a peer endpoint name, an identity associated with the peer endpoint name, a current state, and a cloud with which the peer endpoint name is associated;

exposes a set of at least two methods to a calling application for registering a given peer endpoint corresponding to one from the managed set of peer endpoint class objects, wherein the set of at least two methods are implemented in a set of objects separate and distinct from the single managed peer-to-peer networking endpoint registration interface object, the calling application, and the managed set of peer endpoint class objects, and wherein the set of at least two methods include:

a Register method that registers the given peer endpoint with the peer-to-peer system, and

an Unregister method that unregisters the given peer endpoint with the peer-to-peer system; and

provides a set of at least four constructors, the set of at least four constructors including:

- a blank constructor for use by a peer endpoint resolver,
- a first constructor for constructing the single managed peer-to-peer networking endpoint registration interface object based on a specified peer endpoint,
- a second constructor for constructing the single managed peer-to-peer networking endpoint registration interface object based on the specified peer endpoint and an identity of the specified peer endpoint, and
- a third constructor for constructing the single managed peer-to-peer networking endpoint registration interface object based on the specified peer endpoint, the identity of the specified peer endpoint, and a specified cloud;

selecting, by the calling application, one method from the set of at least two methods exposed by the single managed peer-to-peer networking endpoint registration interface object;

communicating with the single managed peer-to-peer networking endpoint registration interface object by the calling application;

passing, by the calling application to the single managed peer-to-peer networking endpoint registration interface object, parameters required by the selected method; and

initiating the selected method.

49. (New) The method of claim 48, further comprising establishing, by the calling application prior to selecting the Register method:

- the given peer endpoint,
- a given peer endpoint IP address, and

a given cloud with which the given peer endpoint is associated;
the establishment in a given peer endpoint class object of the managed set of peer endpoint class objects.

50. (New) The method of claim 48, further comprising creating the single managed peer-to-peer networking endpoint registration interface object to provide a RegistrationChanged event corresponding to a registration state type, wherein the RegistrationChanged event is raised when a change to the registration state type occurs.

51. (New) The method of claim 50, further comprising exposing a set of registration state type values for the registration state type, the set of registration state values including:
an UnregisteredState value for indicating that the given peer endpoint is unregistered with a specified cloud,
a RegisteredValue indicating that the given peer endpoint is registered with the specified cloud, and
a FailedtoRegister value indicating that the given peer endpoint failed to register.

52. (New) The method of claim 48, wherein selecting one method from the set of at least two methods comprises selecting the Unregister method when a previously registered peer endpoint disassociates from a previously associated scope.

53. (New) The method of claim 48, further comprising creating the single managed peer-to-peer networking endpoint registration interface object to provide a set of exceptions, the set of exceptions including:

a CloudDisabled exception thrown by the Register method for indicating that a specified cloud name is disabled,

a CloudNotFound exception thrown by the Register method for indicating that the specified cloud name is not available,

an InvalidIdentity exception thrown by the Register method for indicating that a specified identity cannot be accessed,

a DuplicateRegistration exception thrown by the Register method for indicating an identical registration to a requested registration exists, and

a NoIPEndPoint exception thrown by the Register method for indicating a lack of IP address in a peer endpoint class object associated with the given peer endpoint.

54. (New) A method of resolving, by an application, a peer name to a peer endpoint in a peer-to-peer system, the method comprising:

creating a managed set of peer endpoint class objects wherein each peer endpoint class object of the managed set of peer endpoint class objects contains a peer endpoint, an IP address associated with the peer endpoint, and a cloud with which the peer endpoint name is associated;

creating a single managed peer-to-peer networking resolver interface object wherein the single managed peer-to-peer networking endpoint resolver interface object:

provides a set of peer endpoint resolver properties including a peer endpoint name, a cloud with which to resolve the peer endpoint name, a maximum number of names to resolve, and a timeout period set by a calling application;

exposes a set of at least three methods to the calling application for resolving a given peer endpoint name, wherein the set of at least three methods are implemented in a set of objects separate and distinct from the single managed peer-to-peer networking endpoint resolver interface object, the calling application, and the managed set of peer endpoint class objects, and wherein the set of at least three methods includes:

a BeginResolution method that starts an asynchronous resolution of the given peer endpoint name,

an EndResolution method that ends the asynchronous resolution of the given peer endpoint name,

a ResolveSynch method that synchronously resolves the given peer endpoint name; and

provides a set of at least three constructors, the set of at least three constructors including:

a first constructor for constructing, without any parameters, the single managed peer-to-peer networking endpoint resolver interface object for peer endpoint name resolution,

a second constructor for constructing the single managed peer-to-peer networking endpoint resolver interface object based on a specified peer endpoint name, and

a third constructor for constructing the single managed peer-to-peer networking endpoint resolver interface object based on the specified peer endpoint name, a specified cloud, a specified maximum numbers of names to resolve, and a specified timeout period; and

selecting, by the calling application, one method from the set of at least three methods exposed by the single managed peer-to-peer networking endpoint resolver interface object;

communicating with the single managed peer-to-peer networking endpoint resolver interface object by the calling application;

passing, by the calling application to the single managed peer-to-peer networking endpoint resolver interface object, parameters required by the selected method; and

initiating the selected method.

55. (New) The method of claim 54, further comprising creating the single managed peer-to-peer networking endpoint resolver interface object to provide a set of exceptions, the set of exceptions including:

a CloudDisabled exception thrown by the ResolveSynch method for indicating that a specified cloud is disabled,

a CloudNotFound exception thrown by the ResolveSynch method for indicating that the specified cloud is not available, and

an InvalidIdentity exception thrown by the ResolveSynch method for indicating that a specified identity cannot be accessed.

56. (New) The method of claim 54, further comprising creating the single managed peer-to-peer networking endpoint resolver interface object to provide an event handler, wherein the event handler receives:

a PeerNameFound event to be raised when an IP address corresponding to the given peer endpoint name is found, and

a ResolutionComplete event to be raised when a requested resolution has completed without finding a corresponding IP address for the given peer endpoint name.

57. (New) The method of claim 56, further comprising exposing a set of values corresponding to a reason for completion of the requested resolution, the set of values including:

a Timeout value for indicating reaching a specified timeout period,

a MaxResultsReached value for indicating reaching a specified maximum number of names to resolved,

a NoMoreResults value for indicating a lack of obtainable results, and

a EndResolutionCalled value for indicating an initiation of the EndResolution method.